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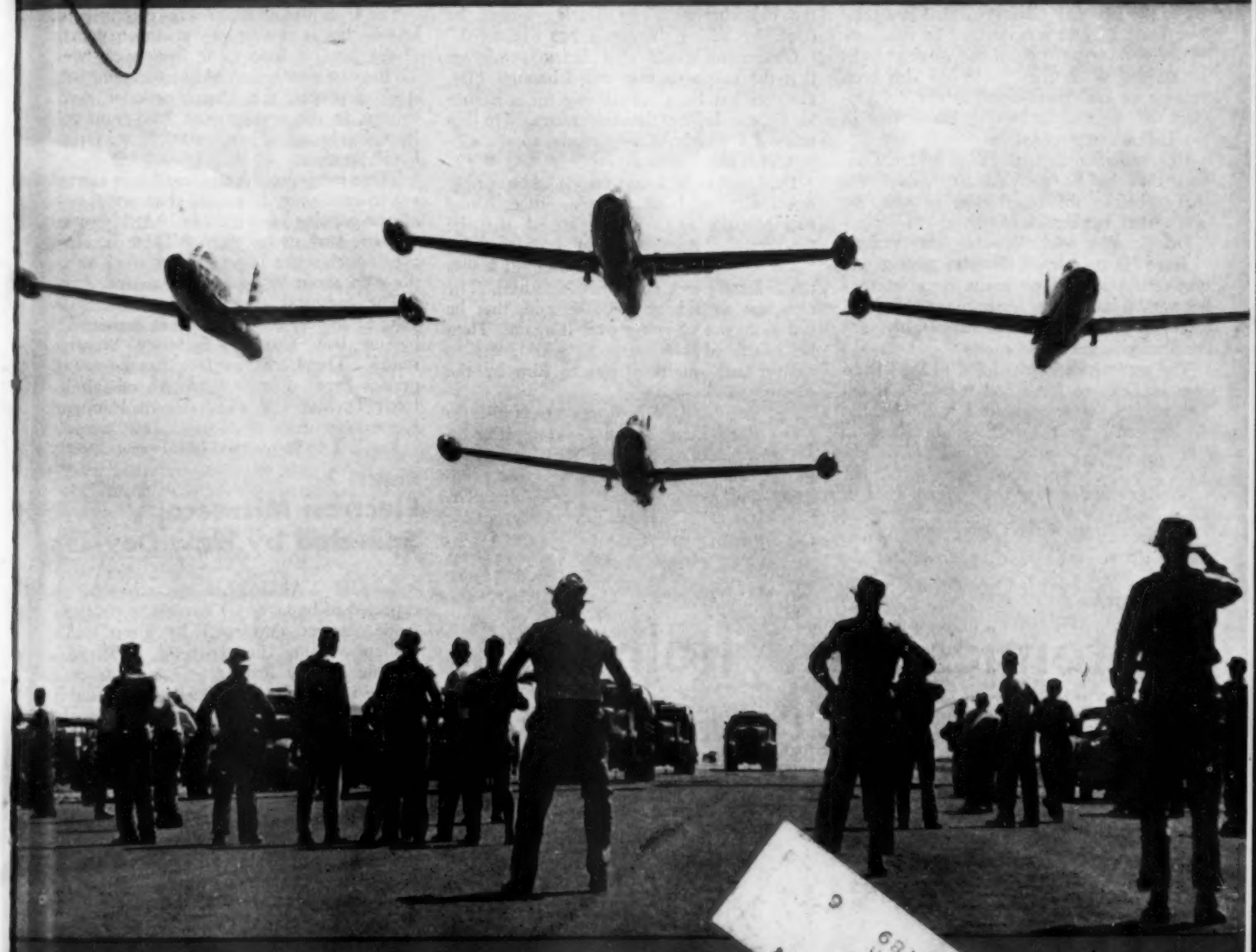

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See Page 143

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GENERAL SCIENCE

Condon Subpoenaed

Topflight physicist, president-elect of the AAAS, ordered to appear before the House Un-American Activities Committee in Chicago.

➤ DR. EDWARD U. CONDON, former head of the National Bureau of Standards, has been subpoenaed to appear before a meeting of the House Un-American Activities Committee in Chicago on Sept. 5.

Dr. Condon received the subpoena at Corning, N. Y., where he is research director of the Corning Glass Works. More than four years ago, he was charged by the committee with being "one of the weakest links in our atomic security." He has also been praised for his contribution to the development of the atomic bomb. He is one of the nation's top physicists.

Despite demands at the time by Dr. Condon that he be allowed to answer the charge before the committee, he was not given that opportunity.

Dr. Condon told SCIENCE SERVICE that: "I have always been willing to answer any questions put to me by the committee. I hope this hearing will, once and for all, clear up these by now thoroughly discredited charges."

The committee is scheduled to hold hearings in Chicago for a full week. It is not known why it was decided to invite Dr. Condon to appear in Chicago. However, Chicago is the home of Rep. Richard B. Vail, R., Ill., who was a member of the committee at the time the original charges were made.

Chairman John S. Wood, D., Ga., said he thought Rep. Vail might be present at the hearing. He also expected most of the committee members to be present. Chairman Wood said each member of the committee would be given an opportunity to ask Dr. Condon any questions they might have. He said he didn't know for sure, but he thought they would have to do with the old charges. The hearing would be open, he added, "unless I am overruled."

Chairman Wood told SCIENCE SERVICE that the subpoena was issued because, "Dr. Condon has been bellyaching for a chance to appear before the committee. He has refused a couple of invitations, so we subpoenaed him."

Dr. Condon said that there had been only one invitation from the committee, issued two months ago. He explained that he "respectfully declined" that invitation because from the tone of it he thought it was made merely as a convenience to him. The case was so old by then, he said, that he saw little use of going over it again. Then he reiterated his complete willingness to answer any questions put to him by the committee.

Dr. Condon will have no opportunity to make a statement before the committee on his own behalf. Chairman Wood explained that witnesses are never given this privilege. However, it is expected that Dr. Condon will have something to say outside the hearing room at the time.

Science News Letter, August 30, 1952

ENTOMOLOGY

Systemics Fight Bollworm

➤ CONTROL OF pink bollworm, a serious cotton insect pest, through use of systemic insecticides should be possible according to entomologists of the U. S. Department of Agriculture and the Texas Agricultural Experiment Station, Brownsville.

A systemic insecticide is one that is absorbed by a growing plant in quantities great enough to destroy insects that may feed on the plant.

The scientists are testing hundreds of chemical compounds to find out if they can be used as systemic insecticides. They are seeking chemicals that can be absorbed by cotton plants so that pink bollworms developing inside the green cotton bolls will be killed.

So far a dozen organic phosphate compounds that will destroy the pink bollworm through systemic action have been found. However, the scientists caution, the knowledge that some of these chemicals can be absorbed by the cotton plant in sufficient amounts to kill the pink bollworms in the bolls is a long way from practical control.

Research must be continued to determine what these insecticides will do under field conditions. It must be proved that they leave no chemical residues in the cotton fiber or seed that would be harmful to man or to livestock. There are the additional problems of correct dosages, methods and time of application, and cost.

If this research can prove the practical worth of certain chemicals as systemics, cotton farmers will have a means of controlling the pink bollworm, and possibly other serious cotton pests, with fewer applications of insecticide than are currently applied. New fruit and foliage developing on the plant would absorb a portion of the systemic already in the plant, making retreatment unnecessary.

Systemic insecticides are almost unaffected by rain and winds that wash and blow away surface dusts and sprays. Most important, systemics would kill the pink bollworm inside the cotton squares and bolls where present-day insecticides cannot reach.

Science News Letter, August 30, 1952

AGRICULTURE

Billion Acres Grassland Give Only Quarter Food

➤ ONE OF the great potentials for increased food production in the U. S. is in grasslands, Secretary of Agriculture Charles Brannan told the opening session of the Sixth International Grassland Congress, State College, Pa.

The U. S. has a billion acres of grassland, he said, but is getting only about one-fourth of the possible food value from such land. To increase production of livestock and livestock products, the Department of Agriculture, in cooperation with land-grant colleges, has launched a 10-point "Better Grassland" program.

These programs, he said, are being carried out in each state, and more than one-fourth of our grassland has already been improved in some way under them. There is, however, much more improvement work to be done on about 90% of our grassland acres.

The technical agricultural advances developed in this country are not surrounded by an Iron Curtain, Secretary Brannan stated. The U. S., in fact, has borrowed grasses from Europe and Africa, alfalfa from Turkey, and clovers from Iran and Korea.

Science News Letter, August 30, 1952

PHYSICS

Electron Microscopy Speeded by New Devices

➤ MUCH VALUABLE research time is expected to be saved by two electron microscope devices developed by Francis W. Bishop of the University of California's Atomic Energy Project at Los Angeles.

One is a device that monitors the stability of the power supply that feeds the electronic lenses. The slightest fluctuation in current often markedly affects the quality of the photographs taken through the microscope. The new monitoring device gives advance warning of instability in the power supply, allowing the operator to make adjustments before damage is done. A "magic eye," suited to the darkness in which electron microscopists work, blinks advance warning of trouble to come.

The second is a diaphragm adjuster which functions similarly to that of a camera. It permits the viewer to select and center any one of five apertures, through which images are brought into sharper focus, by a simple external adjustment. Formerly each of the apertures, which range from .001 to .005 of an inch in diameter, had to be inserted and centered by complicated, manual trial and error.

Science News Letter, August 30, 1952

MEDICINE

New Hemophilic Disease

Rare affliction, similar to hemophilia, discovered in 16-year-old boy, leads to finding of new plasma factor, responsible for clotting of normal blood.

➤ A RARE new disease, similar to hemophilia, has been discovered by a group of scientists at the University of California School of Medicine, San Francisco.

Discovery of the disease also uncovered a new clotting factor in the blood of all normal individuals. The new factor is called plasma thromboplastin component (PTC). A deficiency of the factor causes the rare disease, which at present is called simply "PTC deficiency disease."

The disease was discovered in a boy now 16 years old, Kent Kincaid of Walnut Creek, Calif. Young Kincaid has been under treatment by the University physicians since 1936 when he was eight months old. He has suffered from internal bleeding almost from birth, and received his first blood transfusion in his first week of life.

Because his bleeding could be controlled by blood transfusions, the boy was believed to be a hemophiliac. But this diagnosis became suspect about four years ago. Whereas a hemophiliac often goes for years without bleeding, young Kincaid's episodes recurred with alarming regularity. Further, antihemophilic globulin, a fraction of normal plasma, which usually is effective in hemophilia, was useless against Kent's bleeding.

An intensive study of the youth's disease during the past four years has demonstrated that he suffers from deficiency of a previously unrecognized factor present in the blood of all normal people.

In two scientific papers, one published in the *Proceedings of the Society for Experimental Biology and Medicine* and another scheduled to appear in *Blood*, the scientists report that they have partially purified the new PTC factor.

They are seeking a purer fraction, which would make treatment of young Kincaid simpler. At present he is given two pints of plasma each two weeks. With pure PTC it would be possible to prevent bleeding by giving him an injection of less than a teaspoonful of fluid at weekly intervals.

Dr. Paul Aggeler, leader of the team of physicians, said the discovery has several important implications.

First, while the disease undoubtedly is rare, it is likely that other cases will be found, especially among those now thought to suffer from hemophilia.

Second, it is important to full understanding of the blood clotting mechanism, and may lead to better treatment of other hemorrhagic disorders.

Third, overexposure to radiation can produce severe bleeding. A thorough understanding of the blood-clotting mechanism is of utmost importance in preparing against the hazards of atomic radiation.

The team of scientists includes, in addition to Dr. Aggeler, Drs. Sidney G. White, Mary Beth Glendening, Ernest W. Page, Tillie B. Leake and George Bates.

Support for the work has come from the Atomic Energy Commission, the American National Red Cross, the U. S. Public Health Service, the Adalynn Herndon Memorial Fund and the Henry Schussler Memorial Fund.

Science News Letter, August 30, 1952

RADIOLOGY

X-Rays Spot Emotional Digestive Upsets Also

➤ X-RAYS CAN detect emotional and allergic causes of digestive troubles as well as organic causes, Dr. Lowell S. Goin, Los Angeles radiologist, has found.

He gave as an example a woman of Jewish ancestry who had disregarded the dietary laws of her religion regarding pork. She had a 22-year history of vomiting, abdominal pain and diarrhea. An X-ray showed no organic lesion, such as cancer or some anatomical defect of the intestinal tract, and no unusual behavior of the intestinal tract. A second test was made with finely ground pork mixed with the opaque medium used to make the X-ray picture. The patient did not know what was in this second mixture. Again the X-rays showed no sign of any abnormal reaction. This eliminated allergy to pork as a cause of her trouble.

Then a third test was made. This time the normal opaque medium used in the first test was used. And the patient ate a piece of fat-free well done roast pork.

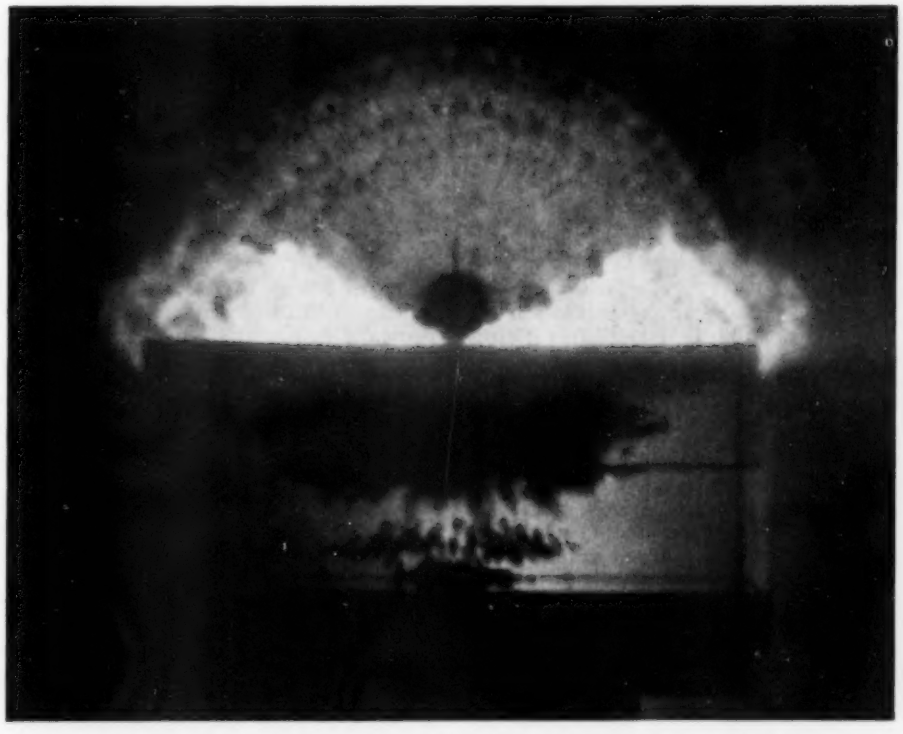
Within 30 minutes after eating the pork she had violent pain in the abdomen and an X-ray of the abdomen showed a striking change in the small intestine.

The patient recovered completely, Dr. Goin reported, when she understood the nature of her conflict and stopped trying to ignore consciously laws from which she could not escape unconsciously.

X-rays detected allergy to ice cream, milk and whisky as the cause of digestive trouble in another patient.

Details of the studies appear in the technical journal of the Radiological Society of North America, *Radiology* (Aug.).

Science News Letter, August 30, 1952



CRACKING GLASS—Detonation of the high explosive, Pentolite, laid along the center of two glass plates, shows shock waves set up in fracturing glass. The original shock wave is seen to be partially transmitted from the first to the second plate and partially reflected back into the first plate, Dr. E. M. Pugh of Carnegie Institute of Technology, Pittsburgh, supervisor of the glass cracking studies, reports.

MEDICINE

Mental Crippling of Polio

Data from autopsies reveal that hypothalamus is damaged by bulbar poliomyelitis attack, making adjustment to stress of life difficult for surviving patients.

➤ PATIENTS WHO survive bulbar poliomyelitis may be left with a kind of emotional and nervous crippling that makes them unable to stand the "moderate stress of everyday life."

Studies showing this are reported by Drs. A. B. Baker, Sam Cornwell and Ian A. Brown of the University of Minnesota Medical School, Minneapolis.

Bulbar polio was once greatly dreaded because it was so often fatal. About a fourth of the cases in the current outbreak are bulbar cases, according to the National Foundation for Infantile Paralysis. In recent years medical scientists have learned more about how to fight this type of infantile paralysis and many more patients are surviving the acute illness and returning home.

"However," the Minnesota doctors state, "many of these patients, although apparently recovered and comfortable in the protected environment of the hospital, encounter considerable difficulty when exposed to even the moderate stress of everyday life. The slightest physical exertion, the routine environmental infections or even mild daily excitements and problems precipitate many untoward physical discomforts which indicate an instability of nervous system function."

Changes in emotional behavior which have been noticed in these recovered bulbar polio patients have usually been put down to the patient's reaction "to such an acute and threatening illness," the Minnesota doctors point out.

But their studies of fatal cases of bulbar polio show that the hypothalamus, located at the base of the brain, suffered various degrees of damages. When the functioning of this part of the central nervous system is disturbed or harmed, blood pressure, digestive function, starch, sugar and fat utilization, body temperature, sleep, sex functions and emotional responses may be disturbed.

Following the study of the autopsy material, the Minnesota doctors gave 12 recovering bulbar polio patients five tests for the adaptability of the hypothalamus under stress. Abnormal response was found in two to six patients for each of the tests.

Their studies were aided by a grant from the National Foundation for Infantile Paralysis and are reported in detail in the *Archives of Neurology and Psychiatry* (July).

Science News Letter, August 30, 1952

VETERINARY MEDICINE

X-Disease of Cattle

➤ THE REDUCTION or entire elimination of X-disease, or hyperkeratosis, in cattle may be possible on many farms if cattle are kept away from tractors, combines, bulldozers and other farm machinery where they might consume grease or oil.

Research conducted by 17 State Agricultural Experiment Stations cooperating with the U. S. Department of Agriculture led to the advice to keep cattle away from used crank case oil, old oil drums and similar containers. Drainage from around grease racks and in farm machinery sheds should not be allowed to contaminate lots or pastures to which cattle have access.

The scientists agreed that cattle may become affected with X-disease by exposure to or taking into the digestive tract highly chlorinated naphthalenes contained in certain lubricants, or by unknown toxic ingredients in feedstuffs. Research workers at the experiment stations have been able to produce the disease experimentally by giving the suspected feeds under controlled feeding tests.

The disease has also been produced with particular batches of processed concentrates, roofing asphalt and timothy hay from one particular field.

Research results were discussed at a meeting of experiment station representatives and the U. S. Department of Agriculture at the University of Tennessee, Agricultural Experiment Station, Knoxville. Research is being continued to investigate other possible causes of X-disease and products that might contain toxic chemicals. Attempts will be made to develop methods of prevention and control.

Science News Letter, August 30, 1952

ENGINEERING

Dam to Generate More Power for Southwest

➤ DAVIS DAM, a 200-foot-high structure situated 65 miles below Hoover Dam, now has five water-driven electricity generators that can turn out 225,000 kilowatts at the flick of a switch.

Described at a meeting of the American Institute of Electrical Engineers in Phoenix, Ariz., by S. M. Denton and H. O. Britt, both of the U. S. Bureau of Reclamation at Denver, the dam is tied in with the existing electrical network in the Southwest. It can add from 800 million to one billion kilowatt-hours annually to the present electrical capacity of that area.

The dam also helps to conserve water of the lower Colorado River. Its giant reservoir is capable of absorbing "chunks" of water released at Hoover Dam but which are not needed at that time for irrigation purposes farther down the river.

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AERONAUTICS

Engineers to Learn Soviet Air Strength

➤ RUSSIA'S MILITARY aircraft and airborne armament will be studied carefully by engineers attending a "confidential" session of the Society of Automotive Engineers in Los Angeles Oct. 2.

The meeting has been classed confidential to keep the Communists from learning details of the latest United States aeronautical experiments as well as to keep them from finding out how much the United States knows of Russian airpower.

Each person attending must show a clearance certificate obtained through military security officers, SAE advises.

"Soviet Air Weapons" will be discussed by Fred Kobernuss of the Air Technical Intelligence Center, Wright-Patterson Air Force Base, Dayton, Ohio. Some American experiments will be covered by Ralph Bayless of the Consolidated Vultee Aircraft Corp., who will discuss Convair's experience with its delta-winged planes. J. A. O'Malley, Jr., and R. J. Woods, both of Bell Aircraft Corp., will outline design features of the Bell X5's adjustable wings.

During the discussion of Russian aircraft, a new "inter-continental" bomber probably will get a thorough going over. The bomber has been described by the Boeing Airplane Co., as being "remarkably similar" to airplanes still on American drawing boards.

As drawn by a British artist from data smuggled from the Soviet Union, the superbomber has six turbine-propeller engines and swept-back wings. The planes have been produced in small numbers behind the Iron Curtain and reportedly have been seen flying over Moscow.

Science News Letter, August 30, 1952

ZOOLOGY

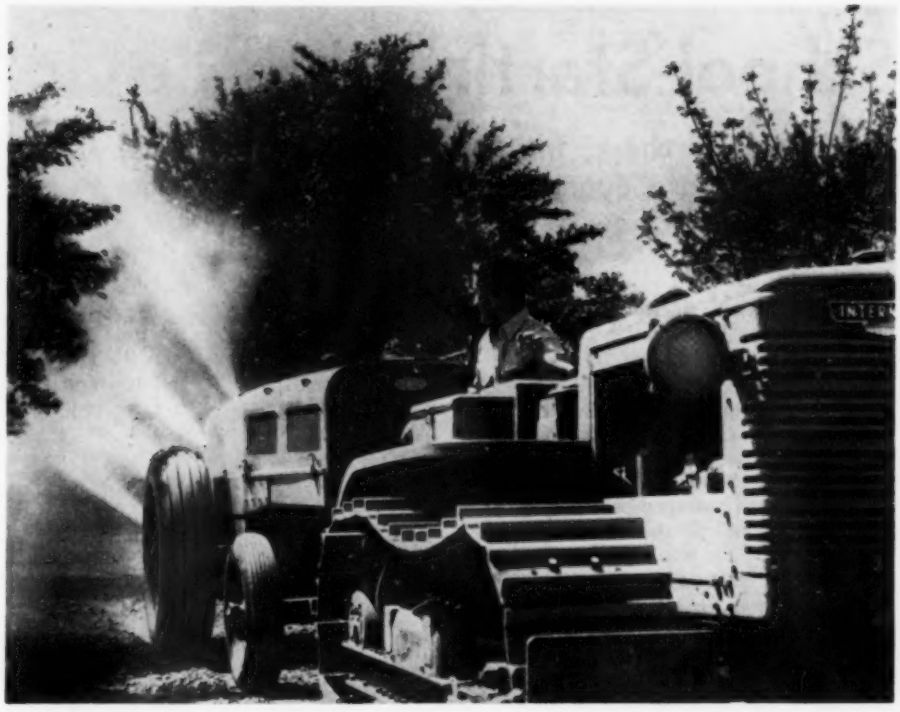
Bats Shiver for Warmth; Wing Blood Cools Them

➤ CERTAIN BATS "warm up their motors" when they are cold and employ a cooling mechanism like a car radiator to keep from getting overheated.

Dr. Raymond B. Cowles, professor of zoology at the University of California at Los Angeles, finds that bats are sensitive to cold and become lethargic at temperatures well above freezing. By shivering, idling their motors so to speak, they are able to raise body temperature to a level sufficient for locomotion.

In hot weather bats produce a great excess of heat while flying. Death would result if it were not for a cooling device, a radiator-like mechanism in the wings. Blood from other parts of the body is shunted into the vast network of small blood vessels in the wings. This allows a great amount of heat to be conducted from wing membrane to the surrounding air in a short time. Thus the blood is effectively cooled.

Science News Letter, August 30, 1952



TESTING SPRAY CHEMICALS—Because chemicals used for killing weeds, protecting crops against plant diseases and controlling insects do not always perform the same in all sections of the country, Nick Lazaneo, foreman, is testing a new insecticide on prune trees at the Du Pont Company's research farm near Cupertino, Calif.

AGRICULTURE

Alfalfa Grows on Sand

➤ SEA SAND can be used to grow alfalfa and possibly other crops, experiments by a Peruvian scientist show.

Dr. Pedro Venturo, delegate of the National Committee for the Protection of Nature, Lima, Peru, said that his studies with crop-growing sands have brought "promising results and economic success." Value of the adjacent land has already increased from three to seven times during the six-year period of his studies, he pointed out.

One-fourth of the earth's crust is made up of sand. These areas have been considered as deserts and unsuitable for cultivation of any kind, but world population compels us, he said, to consider ways and means of using this soil.

The 200-acre section of sand he cultivated is located on the Peruvian seashore. It consists of pure sand with traces of salt, Dr. Venturo told scientists from 50 nations attending the Sixth International Grassland Congress held in State College, Pa. Being whipped by ocean breezes, salt particles are continually being added to the sand.

To grow his crops, Dr. Venturo first planted trees in contour rows on the sand dunes surrounding his land. This was to prevent sand from the dunes from invading his fields. Then he pumped irrigation water to the trees until he had woods on the slope of the dunes for a distance of 100 feet in some areas, much more in others. Since Dr. Venturo began his experiments with the reforestation, the trees have grown to 30-foot heights.

He brought irrigation water to the coastline by canal, then extended this canal for a mile in a direction parallel to the sea. From this canal, he made secondary channels for irrigating the sand.

He grew the alfalfa and other plants not only in sand, but in first-class humus soil, in order to be able to compare their development and the money earned from the plots.

To cut off the strong ocean winds, he tested plants suitable for windbreak hedges, finally choosing a variety of cane, called "carrizo." Owing to the density of its growth, Dr. Venturo said, this cane forms a wall.

Spray irrigation, he found, is essential during the first month of the plants' development. After this, irrigation by immersion or by maintaining a cover of flowing water in the alfalfa fields may be used.

His experiments have banished the popular idea that deserts are wholly unproductive and incapable of becoming fertile lands in time, Dr. Venturo states.

Science News Letter, August 30, 1952

CHILD HEALTH

School-Starting Advice

Health check, including dental examination, should be made before opening day. Suggest youngsters be allowed to tell of new experiences their own way.

➤ IF YOU want your child to do well at school—and what parent does not?—you will see that he has a health check by the doctor before school starts.

This is particularly important for the boys and girls starting school for the first time. If a child cannot see the blackboard or hear the teacher distinctly, he cannot be expected to learn well. Besides getting poor marks, he may grow discouraged or bored or both. Bad behavior and the label, "stupid," may come next.

The young child may not realize that he does not hear or see as well as he should. His parents may not realize it, either. But the doctor who gives the pre-school examination can find out by testing hearing and eyesight.

A toothache can also keep a child from paying attention to his lessons. The aching tooth may be "only a baby tooth," but it should be cared for so that it stays in the mouth long enough to keep the jaws in right shape for the permanent teeth. By the time a child is ready to start school he usually has acquired his six-year molars.

These are the first and most important of the permanent teeth and should be carefully watched and any cavities filled promptly so that these important grinders will last throughout life.

First Time Exposures

When children start school is the time many of them are exposed for the first time to measles, whooping cough and other "catching" diseases. They can be protected from many of these ailments and the family doctor or pediatrician will advise about this. Every child should be vaccinated against smallpox before entering school and he can be protected against whooping cough, diphtheria and tetanus, or lockjaw. If the child has already had "shots" for these, the doctor may want to give a "booster shot" before school starts.

Bright eyes, rosy cheeks, firm muscles and an erect posture are signs of health the doctor will look for when he gives the child his pre-school check-up. Heart, lungs, nose and throat will also be examined for signs of disease or defects that need attention. Weight and height will be checked, but the important thing about these is whether the child has continued to grow and gain steadily. He may be shorter or thinner than others of his age and still be perfectly healthy.

When six-year-old Junior and Sister go off to school for the first time, they are going there to learn, of course, but there are some things their teachers hope they already have learned.

This may come as a surprise to some parents, but the wise ones will check over the list and start right now teaching their youngsters these necessary facts and skills.

Pre-School Preparation

1. A child entering school for the first time should know his name (last name as well as first or given name and family pet name), where he lives and his telephone number.

2. He should be able to put on and take off his own clothes, particularly coats, snowsuits, overshoes, rubbers and so on. Any parent who finds it a chore to get her own youngsters into and out of these clothes can imagine how impossible it would be for a teacher to do the job for 30 or more children for each recess period plus the beginning and end of each morning and afternoon session. And if mother wants to be sure that Johnny gets his own hat, cap, coat, mittens and so on, she will have his name sewed or clearly printed on each—overshoes included. Further aid to this clothes problem is buying overshoes and rubbers large enough so the child can get them on and off by himself.

3. A child of school age should be trained to wash his hands before and after eating and after going to the bathroom. He should also be taught to flush the toilet after using.

4. By the time a child is ready to go to school he should have learned how to cross streets or roads safely and, if he lives in the country and must walk, how to walk safely on a highway. This means walking on the left hand side of the road, facing the oncoming traffic.

In addition, it helps if the child has learned how to tell time, to handle scissors, crayons and pencils. Six-year-olds are seldom models of deportment, but they should have gotten at least a start on learning to obey persons in authority.

Quizzing Not Recommended

"Well, what did you learn today?" is a question too often asked of children when they get home from school. It is particularly likely to be the greeting to Junior or Sister after the first day at school.

Mother and Daddy naturally want to know all about what their child did and how he liked the new experience. But nothing can be quite so bewildering to the young child as this quizzing right after he gets home from school, a report from the Minnesota Tuberculosis and Health Association points out.

When the child is ready, he will tell all about school. Wise parents will wait until he is ready and then will listen to what he chooses to talk about. Going to school for the first time takes quite an adjustment for the child and he needs to feel that everything at home is just the way it always was and that Mother and Daddy still love and trust him.

Because school is such a new and different experience, it is a good idea to prepare the child for it emotionally as well as physically. School should be something to look forward to and enjoy, not something to be feared or disliked. It would be well for Mother or Daddy to visit school with the child before that first day when school starts.

Background Preparation

Show him the buildings, playground and what a schoolroom looks like and let him sit at one of the small desks or in one of the little chairs. Maybe he can meet his teacher, too. Then things will not seem so strange and he can be sent off on the day school starts in a casual, matter-of-fact way, just as he is sent out to play after breakfast. He will be in better shape to start learning and those painful scenes when crying youngsters refuse to let mother leave them at school can be avoided.

Remember that every child is different. Do not compare him or his performance with other children and what they do, especially older brothers and sisters. On the other hand, do not coddle him and tell him how much you miss him when he is at school. When you start him off to school that first day, start him on the road to becoming a happy, independent grown-up.

Science News Letter, August 30, 1952

INVENTION

Baseball Club Owner Patents Vending Machine

➤ FRED M. SAIGH, JR., owner of the St. Louis Cardinals, is now a fully certified inventor. He has received a patent from the government for a coin-controlled vending machine, presumably suitable for installation in ball parks.

The vending machine is unique in that it can contain various kinds of merchandise at various prices of from 10 to 25 cents and that it has an automatic refunding mechanism. If the merchandise is, for any reason, not delivered to the customer, the correct amount of money is refunded. This happens within a certain time limit. Similarly, if the customer puts too much money in the machine, it is automatically refunded. This is done through switches and cutoffs attached through solenoids. Mr. Saigh received U. S. patent number 2,607,463 for his invention.

Science News Letter, August 30, 1952

NEW BLIND-FLYING GOGGLES—A green-red combination is now recommended to replace the blue-amber colors presently used for the windshield and goggles for pilots in blind-flying practice. The combination allows the pilot to see the instrument panel but not outside the cockpit, while the observer pilot's vision is unrestricted. Here Capt. Mathew R. Wilson, medical researcher at the Air Force School of Aviation Medicine, Randolph Field, Texas, fits a shield of the new green plastic to the canopy of a B-25.

AGRICULTURE

Can Produce More Food

➤ THE WORLD is far from the upper limit of its food production, Dr. F. T. Wahlen of the Food and Agriculture Organization of the United Nations told the Sixth International Grassland Congress in State College, Pa.

Proper use of present-day grasslands would bring quick improvement in the world food situation, he said. Besides further development of such acres, there are the last remaining untouched grasslands, which will soon be opened up for use.

It would be "tragic" and "unpardonable," Dr. Wahlen said, if this untapped food resource were not handled according to the latest techniques and know-how.

To provide food for the world's population, now having its greatest growth in history, the amount of land used for direct human food crops will probably be increased while that used for the support of livestock will be reduced. This will require better fodder crops and an early end to continuous cash crops that drain the land and give nothing back to the land in return, Dr. T. L. Bywater of the University of Aberdeen, Scotland, told scientists from more than 50 nations at the Congress.

One potential food source is Africa, which contains about one-fifth of the world's land surface, yet produces less than one-twentieth of its food. A large part of African land, Dr. J. D. Scott of the University of Natal, Union of South Africa, reported, is not suitable for cultivation and will remain veld, or open pasture land. Although the veld is a wasting asset today, it could be of untold value. The known methods for improving its use must be applied before it is too late, he warned.

Science News Letter, August 30, 1952

INVENTION

Rotating Pipe Sprinkles Field Evenly

➤ COOL, COOL water can be evenly sprinkled on a field through use of an invention which received patent number 2,604,359. The invention consists of a pipe which rotates slowly around a central point from which the water is drawn. Valves in the pipe distribute the water evenly over the field. The water itself drives the supporting wheels, spaced along the length of the pipe.

The inventor is Frank L. Zybach, Strasburg, Colo.

Science News Letter, August 30, 1952

• RADIO

Saturday, Sept. 6, 1952, 3:15-3:30 p.m., EDT "Adventures in Science," with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Franklyn C. Rogers, professor of civil engineering, Rutgers University, N. J., discusses "Research for Better Roads."

PSYCHOLOGY

Seek to Reveal Auto Parking Habits

➤ WHEN A parking lot operator cut down the capacity of his lot from 175 cars to 150, his business jumped 20%.

That may sound unreasonable, but the Highway Research Board has found there seems to be some relation between how long a person has to wait to get his car parked in a parking lot and how many cars are parked in that lot each day.

Parking lots are coming under more study by the Board. One reason is to find out what effect parking lots have on downtown parking congestion.

Headed by Theodore M. Matson of Yale University, a committee of the Board has been formed to ferret out the parking habits of the American driver. The committee will be assisted by independent firms interested in parking problems.

Among other things, the committee wants to know how long you park, where you came from, why you came down town, how you got down town before such-and-such a parking lot was opened, where you parked before it was opened, and how much money you make.

If a man approaches with pencil and paper while you are honking for the parking attendant to give you a claim ticket, do not be alarmed. Your answers to his questions may provide speedier parking for yourself and others in the future.

Science News Letter, August 30, 1952

GENERAL SCIENCE

Half Nation's Bright Boys Available to Services

➤ THE ARMED Forces are getting about half the "bright boys," and the colleges are getting the other half.

This information has come out of a study by the Commission on Human Resources and Advanced Training, a privately sponsored group. Only about 50% of those who can pass the college selective service deferment test actually go to college, the rest are available for service, the commission found.

It is from this group that the Armed Services can draw many of its non-commissioned officers, radar technicians and other enlisted specialists.

Some of them cannot afford to go to college, others just do not want to go, or want to wait until after their military service is completed.

Science News Letter, August 30, 1952

AERONAUTICS

Jet-Propulsion Progress Behind Bomber Adoption

➤ THE RAPID progress in aviation during the ten years since America's first jet-propelled airplane flight is probably responsible for the recent decision to build no more of what is now the nation's largest bomber, the B-36, and to adopt the new B-52 as its successor.

The B-36, a product of Consolidated-Vultee whose first version flew in 1946, was powered with six Pratt and Whitney reciprocating engines. The first production planes were similarly powered. Later production models still had the conventional engines but they were supplemented by four Allison turbo-jets.

The new Boeing B-52, which is to be the long-range international bomber, is powered solely by jets, eight in number, and has sweptback wings to increase its speed.

The fate the B-36 is facing is similar to that of the plane whose place it took in enemy bombing. That is the B-29, the superfortress that helped to bring the Japanese to their knees. Between September, 1942, when the first B-29 was built, and May, 1946, when the last came out of production, a total of 4,221 were constructed.

At the close of the war, many B-29's were put in "moth balls," but some of these came back into active service with the Korean activities and, with certain new equipment, are doing valiant service. But, like the B-17 it succeeded, the B-29 is no longer in production, and the B-36 is now following its trail into history.

Stopping production of the B-36, however, does not put its sister cargo plane into the same category. This is the C-99, the huge cargo transport that can carry some 100,000 pounds of freight or 400 fully-equipped men. It is a six-engine, long-range craft that in test made a non-stop transcontinental flight of 2,300 miles carrying 85,000 pounds of cargo.

It has wings, tailpiece and landing gear of the B-36 type, but its fuselage is longer and larger, and is a double-deck affair to provide extra space for a greater load. This type of craft has been in use now for three years, and probably will be for some time to come.

Science News Letter, August 30, 1952

NUTRITION

Consider Feeling Of Child for Food

➤ THAT CHILDREN have feelings about food is known to every parent who has heard Junior shout, "I hate soup," or "I love ice cream."

Many parents, however, do not realize that these feelings about food start very early, and many do not know what the child's feeling is because he may not be old enough to explain it. When two-year-old Johnny does not want to eat certain of the nice dishes mother prepares for him, it may be that in his secret life he is objecting to all red food or round food or soft food.

At that age color, form and consistency are vital issues, Drs. Ralph D. Rabinovitch and Joseph Fischhoff of the University of Michigan explained in a report to the American Dietetic Association.

Feelings about food change as the child grows older, just as his appetite changes at various ages, the Michigan psychiatrists point out. Many a mother is greatly disturbed when her baby, who has eaten well for the first year and a half, begins to lose his appetite and gets fussy about food.

Reason for the decrease in appetite is that the rapid growth of infancy is over and for a year or so the child will gain at a slow rate and eat less. If mother knows that this is normal, she can stop worrying and trying to force the child to eat.

But for parents worn out by the struggle to keep up with the latest scientific theories on child raising and feeding, perhaps the best advice is that, if the parents are happy and relaxed, they will enjoy mealtimes and the children will too and, as the Michigan doctors put it, the children "will some day be civilized."

Science News Letter, August 30, 1952

INVENTION

Insect Repellent Device Resembles Tiny Mailbox

➤ FLIES, MOSQUITOES and other such pests can be chemically chased away from screen doors by an "insect repellent device" invented by Floyd J. Logan of Alabama City, Ala., and Oaty A. Trawick of Gadsden, Ala.

Assigned patent number 2,606,065, the device resembles a tiny roadside mailbox often seen in the country. It is filled with cotton to hold the insect repellent and it can be clipped to screens.

Science News Letter, August 30, 1952

ASTRONOMY

New Star Spotted Behind Iron Curtain

➤ AN "EXPLODING star" or nova has just been spotted from behind the Iron Curtain. It is in the constellation of Scorpius, the scorpion.

Observers looking at the star on Aug. 11 were amazed to find it had greatly increased in brilliance, being about 15 times as bright as the preceding night. It was of the ninth magnitude, however, and so too faint to be seen without a telescope.

Dr. B. V. Kukarkin of the Sternberg Astronomical Institute in Moscow, noted for his variable star observations, reports that the nova was found by Dr. A. V. Solovyev of the Astronomical Observatory, Stalinabad. News of the "new star" forwarded by Mlle. J. M. Vinter-Hansen of Copenhagen has just reached Harvard College Observatory, clearing house for astronomical news in the western hemisphere.

Science News Letter, August 30, 1952

IN SCIENCE

AGRICULTURE

Bluegrasses Bigger, Soddier Developed

➤ NEW BLUEGRASSES that combine larger size with good growth and with sod-forming ability were reported to the Sixth International Grassland Congress meeting in State College, Pa., by Dr. Jens Clausen of the Carnegie Institution of Washington, Stanford, Calif.

About 30 hybrid strains are now being field tested under weather conditions found over the northern half of the nation and as far north as southern Alaska. The effect of altitudes from sea level to 10,000 feet is also being tested, Dr. Clausen said.

The new bluegrasses combine the larger size and ability of the California and big bluegrasses to grow during mild winters with the summer-growth and sod-forming habit of the Kentucky and northern bluegrasses.

Science News Letter, August 30, 1952

MEDICINE

In Mice, at Least, Work Prevents Cancer

➤ IF MEN were mice they might get some protection against cancer by hard work or some other condition that produced the right amount of stress.

Experiments suggesting this are reported by Dr. Harold A. Rashkis of the University of Pennsylvania and the Wistar Institute in Philadelphia in *Science* (Aug. 15).

Stress from being forced to swim several hours every day for weeks slowed down two kinds of experimental cancers in mice, he found. In one experiment, 10 of 25 non-swimming mice died of the experimental cancer, an ascites tumor, within two weeks compared to three out of the 25 mice forced to swim long periods every day.

In another experiment, the cancer was induced by a chemical, methylcholanthrene. In this group the forced swimmers that survived the cancers longest where those that either had done the least forced swimming or had withstood the ordeal better. The first two to succumb were those that had endured the greatest amount of forced swimming.

This suggests that there may be an optimal amount of stress that gives the greatest protection against tumor development.

Since men are not mice, stress may not be as important in protecting them against cancers. But, Dr. Rashkis points out, many or all of the different agents that have been effective experimentally against cancers share in a general action as stressors to the system besides their individual effects.

Science News Letter, August 30, 1952

NCE FIELDS

BIOCHEMISTRY

"Sweat Blood" When Gland Produces Dye

➤ SOME PEOPLE really do seem to "sweat blood." The red color in their sweat comes from a pigment produced by their sapocrine glands.

These skin glands normally exude unnoticeable quantities of milky white fluid, but sometimes they secrete a pigment, or dye, into the normally colorless fluid. When the perspiration dries, the pigment remains and attracts attention.

Discovery that the apocrine glands produce this pigment was made by Drs. Walter B. Shelley and Harry J. Hurley, Jr., of the Hospital of the University of Pennsylvania, Philadelphia.

Treatment of the condition consists in eliminating the apocrine gland function, which is difficult, the researchers state. Ordinary anti-perspirants do not help much. Local introduction of medications into the skin by electrical means has given some encouraging results.

Sweating red, or any other color, is known as chromidrosis. Some cases obviously are caused by chemicals or drugs taken into the body.

For hundreds of years it has been known that workers in copper mines may have green sweat, and that patients may show red sweat after taking certain medicines. In these instances, however, sweating over the entire body is colored, and the external origin of the color has long been apparent.

The type of chromidrosis that remained unexplained until now is limited to small patches on the body. It usually occurs in the armpits, but may occur anywhere on the skin. It is seen only in adults, often in response to emotions. The sweat may be green, blue, black, yellow, brown or blood-red. In the latter case the condition has sometimes been regarded literally by laymen as "sweating blood."

Science News Letter, August 30, 1952

TECHNOLOGY

Chemicals From Alberta May Match Texas Output

➤ THE REMARKABLE growth of Texas during the past decade or so in the production of chemicals may be matched in the near future by the Canadian province of Alberta.

Its vast oil and natural gas fields can supply the same raw materials on which much of the chemical industries of Texas depend.

Although Alberta oil reserves were discovered only about six years ago, the province now has many hundreds of producing wells and a pipe-line for crude oil stretching over a thousand miles to the Lake Superior area. Chemical companies have already moved into the production area. Heavy production of petroleum chemicals is promised.

One of the most recent plants to be put in operation was installed by the Shell Oil Company and is for the recovery of sulfur from natural gas. This gas, from wells in the Jumping Pound field, contains a considerable amount of hydrogen sulfide from which a high-grade sulfur is obtained. Capacity of the plant is about 30 tons of sulfur a day, an amount that will help considerably in the present sulfur shortage.

The great oil fields of Alberta are a score of miles or more south of Edmonton. To the north of this modern city are great deposits of bituminous sands, the Athabaska tar sands. Crude oil and other petroleum products can be obtained from them, although a commercial process for their extraction has not yet been developed.

When petroleum from other sources becomes limited, these Athabaska sands, together with bituminous sands in the United States, may play a big part in providing fuel oil, gasoline, chemicals and other bituminous products for North America.

Alberta has deposits of several minerals that may make it a chemical producing region. But perhaps of more importance, Edmonton is the gateway to the north to areas in which lead, zinc and nickel have been found. This northern country is also Canada's hopeful uranium country.

Geiger counters have picked up radioactivity in a region stretching from Lake Athabaska, in Alberta and Saskatchewan, north to Port Radium on Great Bear Lake. It is near Lake Athabaska, Sask., where the "boom town" Uranium City is developing as the center of uranium prospecting.

Science News Letter, August 30, 1952

PLANT PATHOLOGY

Tree Branches Take Up Nourishment

➤ THE STEMS and branches of trees can take up nourishment if the fertilizing material is sprayed upon them. So can the leaves.

This was shown in tests at Michigan State College's Department of Horticulture, East Lansing, with radioactive sources of potassium, phosphorus and carbon.

Foliage feeding, which is now being practiced to some extent, must, therefore, take into account the chemicals absorbed by the trunk, branches and shoots as well as the leaves.

But even the bark feeding is not new: among the first field applications of commercial nitrogenous fertilizers to fruit trees were sprays to dormant trees.

A team of Michigan State scientists, H. B. Tukey, R. L. Ticknor, O. N. Hinsvark and S. H. Wittwer, report their experiments with radio-carbon-containing urea in *Science* (Aug. 15).

Science News Letter, August 30, 1952

PATHOLOGY

Chest Acts as "Reservoir" for Blood

➤ THE CHEST may act as a "blood reservoir," holding as much as 40% of the body's blood, studies at the University of California at Los Angeles indicate.

Dr. Alvin E. Lewis, pathology section chief of U.C.L.A.'s Atomic Energy Project, finds that this reservoir may supply extra blood when another part of the body is injured or otherwise in pain. Routine functions that demand extra blood, such as digestion, also draw from the reservoir.

The reservoir is not adequate to cope with all emergency needs, however, says Dr. Lewis. Painful injuries may draw so much blood from the reservoir that not enough is left for other body functions. This condition is known as shock.

In one phase of the study it was noted that the volume of blood in the "chest reservoir" was reduced 90% when the chest was opened. This was due to the partial collapse of lungs and blood vessels.

Although these observations were made with rabbits, they would generally be true of human beings, Dr. Lewis believes. Such information may be valuable in treatment of shock and in developing new surgical techniques.

Science News Letter, August 30, 1952

TECHNOLOGY

Army Engineers Pour Hot Asphalt into Paper Bags

➤ THE ARMY is pouring hundreds of pounds of hot asphalt into paper bags. The idea is to find another shipping container to hold the paving material when temperatures soar to 165 degrees Fahrenheit or drop to a frigid minus 65.

Technicians at the Army's Engineer Research and Development Laboratories, Fort Belvoir, Va., say the bags are made of several layers of tough paper. They are lined on the inside with a clay coating that strips right off the packaged asphalt, making it easy to reach.

The bags seem to work "pretty well," and they have several advantages over the metal drums currently used to ship asphalt. Periodic scarcities of metal and also the higher cost of metal drums made it advisable to find another shipping container, laboratory technicians say.

The multiwalled paper bags, made by a commercial company, are easier to handle, are less expensive and are easier to open than the drums.

But sometimes when the asphalt becomes hot it expands, breaks open the bags and runs out. When the material becomes extremely cold, it becomes brittle. If dropped then, the bags sometimes burst.

Although the bags have not proved completely satisfactory in the Army tests, they do show promise. Army technicians have made some suggestions for improvement.

Science News Letter, August 30, 1952

ASTRONOMY

Jupiter Now Visible

Mars' light dimmed by its closeness to horizon. Most brilliant star to be seen in September is Vega, shining directly overhead this month.

By JAMES STOKLEY

➤ ALTHOUGH THE planet Mars, so brilliant in the evening sky a few months ago, has faded and barely remains visible, Jupiter is now taking its place.

Both of these planets appear on the accompanying maps, which show the sky about 10 p.m., your own kind of standard time at the first of September, an hour earlier in the middle of the month and two hours earlier at the end. (Add one hour if you are on daylight time.)

Mars, at the beginning of September, sets about three and a half hours after the sun, so it just manages to be shown low in the southwest.

Still as bright as any first magnitude star, its brilliance is dimmed by its lowness, which means that its light is greatly absorbed by the greater length of terrestrial atmosphere through which it has to pass. Earlier in the evening than the times for which these maps are drawn, it is, of course, higher, farther south and brighter.

During September, Mars passes through two constellations in its easterly motion. On the first it is in Scorpius, the scorpion; then it enters Ophiuchus, the serpent-bearer. This, by the way, is not officially one of the 17 constellations of the zodiac, the path of the planets, though it occupies more of that band of the sky than some that are.

Jupiter Ten Times Brighter

Jupiter, of magnitude minus 2.2, is a little more than ten times as bright as Mars and now stands in the constellation of Aries, the ram. It can be seen low in the northeast, rising nearly three hours after the sun sets.

Thereafter, it is brilliantly visible through the rest of the night, climbing highest when it is directly south, about 4:30 a.m. at the beginning of September.

Venus has also come into the evening sky, though it sets so soon after the sun that it does not appear on our maps. However, especially toward the end of September, when it sets slightly more than an hour after the sun, one might get a glimpse of it near the western horizon as dusk is falling.

Its magnitude is minus 3.3, more than two and a half times as bright as Jupiter, so there is no danger of confusing it with any other planet.

Among the stars, the most brilliant shown is Vega, in Lyra, the lyre, which is seen nearly overhead. Just east of this group is Cygnus, the swan, with the star Deneb. A little south of the western end of Cygnus is Aquila, the eagle, in which first-magnitude Altair shines.

Low in the northwest is Bootes, the bear-driver, with Arcturus, though this bright star, like Mars, is dimmed by reason of its low altitude. Also low, but in the northeast to the left of Jupiter, is Capella, part of Auriga, the charioteer, which is coming into better view in the coming months, like Jupiter.

This is not true of Fomalhaut, also seen low, but toward the south. Part of Piscis Austrinus, the southern fish, it is during the autumn months as high as it ever gets, as seen from our latitudes.

Autumnal Season Starts

Ever since June 21, when it was farthest north, the sun has been moving southward through the sky. On Sept. 22, at 9:24 p.m. EST, it reaches the half-way mark, when it stands directly over the equator of the earth.

This is the autumnal equinox, which marks the beginning of autumn in the northern hemisphere. But now the sun's southward motion, which is taking it low in the skies of northern countries, is carrying it into a higher place for people south of the equator. Consequently, our autumnal equinox is their vernal equinox, the beginning of spring.

The constellation of Lyra, in which Vega shines so brightly overhead these evenings, has several points of interest. For one thing, Vega has been the pole star in the past, and will be again in the future.

Our present pole star, Polaris, in Ursa Minor, the lesser bear, happens to have that distinction because it is practically in the direction of the northern end of the earth's axis. Since the apparent daily turning of the sky from east to west is really due to the spinning of the earth itself on its axis in the same period from west to east, the whole sky turns about the vicinity of the pole star.

Its own movement is very small; that is why it always stays in about the same place, and can be used to find one's direction at night.

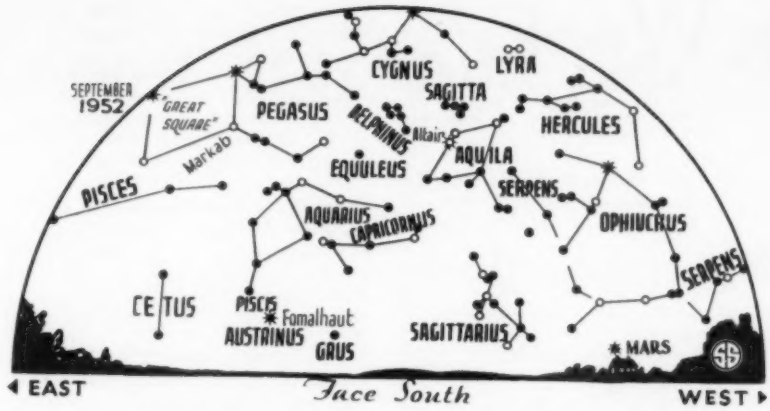
Wobbling-Top Motion

However, the axis of the earth does not remain fixed. In the course of about 26,000 years it describes a conical motion, like the wobbling of a top. Now the axis points to a part of the sky close to our Polaris, but during this period, known as the "precessional" cycle, it points to a number of other stars. In 12,000 B.C., it was directed to a point near Vega, and it will be again in 14,000 A.D.

Also in Lyra there is an interesting star, known as epsilon Lyræ. Quite close to Vega are two fainter stars, forming an equilateral triangle with it. The star toward the northeast is the one referred to. It is not really a single star. A keen eye shows it to be two, separated by a distance equal to about a tenth of the moon's apparent diameter in the sky. The duplicity is very easily seen if one looks through a pair of binoculars.

But this is not the whole story, for if one looks at epsilon Lyræ through a telescope, it is seen that each of the two stars themselves are double. The separations of the stars in these pairs are about a seventieth and a ninetieth of the distance between the pairs themselves. Because of its composition, epsilon Lyræ is often called the "double-double."

Just below Lyra is the constellation of Hercules, and this is interesting because it is where we're going. Long ago astronomers found that the stars in that direction seem to be drawing apart, while those in



☼ ✸ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

the opposite part of the sky, toward the southern constellation of Columba, the dove, seem to be gathering together.

Furthermore, the stars all around the sky in a great circle at right angles to the direction of these groups show a marked tendency to be moving from Hercules toward Columba. The spectroscope shows whether a star is moving towards us or away from us, and it has been found that the stars in the direction of Hercules are approaching, while those toward Columba show a general recession.

All these effects could be explained if the sun and its attendant planets were fixed in space, and all the other stars were rushing past us. However, this is in the class of "everybody's out of step but Johnny," so it is much more reasonable to assume, as astronomers have done, that the solar system is moving through space, towards Hercules, at a speed of about 12 miles per second.

Thus while the earth revolves about the sun in an orbit that is nearly circular, the fact the sun itself is moving at the same time means that our movement is actually that of a helix, like the thread of a screw, or the wire in a spring.

Celestial Timetable for September

Sept.	EST	
3	1:00 a.m.	Moon nearest; distance 222,700 miles.
	10:19 p.m.	Full moon.
8	9:51 p.m.	Moon passes Jupiter.
10	9:36 p.m.	Moon in last quarter.
15	2:00 p.m.	Moon farthest, distance 252,100 miles.
19	2:22 a.m.	New moon.
21	9:18 a.m.	Moon passes Venus.
22	9:24 p.m.	Equinox; autumn commences in northern hemisphere.
25	1:22 p.m.	Moon passes Mars.
26	3:31 p.m.	Moon in first quarter.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, August 30, 1952

TECHNOLOGY

Electronic Truck Scales

➤ ELECTRONIC SCALES buried under highways now can weigh trucks as fast as they speed by.

Often used to measure weights of moving railroad cars, the scales were adapted to highways by engineers of the U. S. Bureau of Public Roads. The scales may replace the costly and time-consuming process used at present.

The truck's gross weight, speed, axle weights and axle spacings all can be measured in a fraction of a second when a fast-moving truck rolls across an inconspicuous platform laid into the road.

Electric strain gages and an oscilloscope combine to produce patterns on a screen that reveal the data about the trucks.

Strain gages are lengths of wire of a known resistance which allow a certain amount of current to flow through them. When the wires are stretched or compressed, the resistance changes and so does the current through them. That, in turn, is recorded on the screen of the oscilloscope.

The accuracy of the scales compares favorably to the accuracies of scales that weigh trucks standing still. Research engineers believe even more accuracy can be obtained in time.

At present, weighing trucks on the nation's highways requires about a six-man party equipped with portable loadometers. The party can weigh only about 200 trucks in eight hours, and a day's work costs about $125. Truckers often take round-about routes to avoid being delayed at a weighing station.

By using the electronic scales, more trucks can be weighed without producing traffic tie-ups. Overloaded trucks can be spotted quickly and checked on conventional truck-weighing scales to obtain a more accurate weight.

Science News Letter, August 30, 1952

HOW TO RETIRE SOONER

by earning a small income

Government figures prove you need much less money if you retire to the country, and now a new book shows over and over again how to make the money you do need, whether you retire with or without a lot of money in the bank.

Fred Tyler's **HOW TO MAKE A LIVING IN THE COUNRTY** is "virtually a blue print for the retired man or woman wanting to make their own way," says the Chicago Daily News.

With this book, you learn:

—how to make the most income from tourist cabins and a trailer camp (including where to locate for the most business at highest rentals);

—what to do to earn $3000 a year from a week end roadstand (even if you never raise a green thing);

—how 500 chickens will bring you a fine living on your own bit of land;

—the best way known to learn which business to start;

—the only sure way to get a good buy in a business put up for sale;

—how a $2500 investment in a part-time business will bring you all the income a retired family may need in the country;

—the dozens and dozens of other dignified, easy to start part-time enterprises that pay well in the country (from renting out equipment for week end farming to dozens of other profitable ideas).

Read this 75,000 word book now. Check off the ways you'd like to earn a small income in the country. See how easily they make retirement possible for you—now. Despite its big size, **HOW TO MAKE A LIVING IN THE COUNTRY** costs only $1. Money back, of course, if not satisfied.

For your copy, simply send this ad with your name and address and $1 bill to **HARIAN PUBLICATIONS, 31 SECOND AVE., GREENLAWN (LONG ISLAND), NEW YORK.**

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. books in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

BIOCHEMISTRY AND HUMAN METABOLISM—Burnham S. Walker and others—*Williams and Wilkins,* 812 p., illus., $9.00. Intended as a text for medical students, this work emphasizes human biochemistry. Clinical applications are combined with theoretical material.

CAMERA LENSES: A Handbook to Lenses and Accessories for Amateur and Professional Photographers—Arthur Lockett, Revised by H. W. Lee—*Pitman,* 3rd ed., 142 p., illus., $2.50. This book for hobbyists and experts includes a few simple formulæ and methods for testing lenses. Filters, view-finders and range-finders are also discussed.

FOOD SCIENCE: A Symposium on Quality and Preservation of Foods—E. C. Bate-Smith and T. N. Morris, Eds.—*Cambridge University Press,* 319 p., illus., $8.00. A collection of lectures given at the University of Cambridge and revised for publication. Contains chapters on the chemical mechanisms of spoilage and methods of food preservation.

FOURTEENTH-CENTURY BLUE-AND-WHITE: A Group of Chinese Porcelains in the Topkapu Sarayi Müzesi, Istanbul—John Alexander Pope—*Freer Gallery of Art,* Publication 4089, 85 p., illus., paper, $2.00. Based on the author's investigation of the Turkish collection of porcelains, which contains 10,000 pieces. He examined a small group of blue-and-white in an attempt to place them in the proper historical setting.

FROM THE DUST OF THE EARTH—William H. Lathrop—*Govt. Printing Office,* Agriculture Information Bulletin No. 78, 15 p., illus., paper, 10 cents. If the 460 million acres of good cropland left in the U. S. were divided among our present population, it would amount to about 3 acres per person. This bulletin tells how to safeguard the land.

GOOD READING—Committee on College Reading, Atwood H. Townsend, Chairman—*New American Library,* 20th Anniversary Edition, 226 p., paper, 35 cents. Included in this guide to more enjoyable reading are personal lists of basic books recommended by Carl Sandburg, Aldous Huxley and others. Books classified under general topics are accompanied by short descriptions and present a representative selection.

INSECTS: 1952 Yearbook of Agriculture—Alfred Stefferud, Ed.—*Govt. Printing Office,* 952 p., illus., $2.50. This year's volume is intended to help farmers and city folk to identify and get rid of their insect enemies.

MARGINAL PUNCHED CARDS IN COLLEGE AND RESEARCH LIBRARIES—Howard F. McGaw—*Scarecrow Press,* 218 p., illus., $4.50. In addition to various systems and equipment discussed, suggestions are given for techniques and applications that will assist those who work with these cards.

MATERIALS SURVEY—U. S. Bureau of Mines—*Govt. Printing Office,* illus., paper. Antimony, 280 p., $1.25; Lead, 574 p., $3.50; Asbestos, 146 p., $1.75; Nickel, 291 p., $2.00. This survey of critical materials was compiled for the Materials Office, National Security Resources Board, to show what the emergency supply and demand is in the U. S.

NATIONAL SANITATION FOUNDATION STANDARDS: Soda Fountain and Luncheonette Equipment—Joint Committee on Food-Equipment Standards—*National Sanitation Foundation,* 58 p., illus., paper, 50 cents. Specifications for constructing and installing soda fountains in order to protect health.

OCEANOGRAPHY 1951: A Report on the Present Status of the Science of the Sea—NAS Committee of Oceanography, *National Academy of Sciences,* 36 p., illus., paper, $1.00. Included in this publication is a review of the present facilities for oceanographic research in the U. S.

QUANTITATIVE CHEMICAL ANALYSIS—Leicester F. Hamilton and Stephen G. Simpson—*Macmillan,* 10th ed., 529 p., illus., $4.50. This text has been extensively revised since its original publication under the title, Talbot's Quantitative Chemical Analysis. More space is devoted to theoretical discussions and laboratory directions are given to aid the student.

SEMIMICRO LABORATORY EXERCISES IN GENERAL CHEMISTRY—J. Austin Burrows, Paul Arthur and Otto M. Smith—*Macmillan,* 2nd ed., 302 p., illus., paper, $3.50. At present over 700 students at Oklahoma A. and M. are performing these experiments with inexpensive semimicro equipment and this manual.

THE SOUTH AMERICAN HANDBOOK: 1952—Howell Davies, Ed.—*Trade and Travel Publications* (H. W. Wilson), 29th ed., 782 p., illus., $2.00. A book of British origin containing useful information for travelers and businessmen about various South American countries, their resources, climate, transportation, currency, etc.

SPECIALIZED TECHNIQUES IN PSYCHOTHERAPY—Gustav Bychowski and J. Louise Despert, Eds.—*Basic Books,* 371 p., $5.00. These papers, contributed by specialists, give you what you want to know about such special techniques as narcosynthesis, hypnoanalysis, group therapy and treatment of sex offenders.

THE SPIRIT AND PHILOSOPHY OF EXTENSION WORK: As Recorded in Significant Extension Papers—R. K. Bliss, Ed.—*Graduate School, USDA and Epsilon Sigma Phi,* 393 p., $4.50. Describing the philosophy motivating your county agent and home demonstration agent, as well as telling some of the accomplishments of agricultural extension work.

THE TECHNOLOGY OF COATED AND PROCESSED PAPERS—Robert H. Mosher, Ed.—*Chemical Publishing Co.,* 733 p., illus., $15.00. This volume succeeds one on Specialty Papers, and deals with operation and equipment for the converting of paper. For the engineer and chemist.

THIRTY-FIFTH ANNUAL REPORT OF THE NATIONAL RESEARCH COUNCIL OF CANADA, 1951-1952—C. J. Mackenzie, President—*National Research Council of Canada,* 46 p., paper, free upon request to publisher, Ottawa, Canada. A review in lay language of scientific investigations and projects now in progress. Written in both French and English.

Science News Letter, August 30, 1952

TECHNOLOGY

Oil Tankers Important To Merchant Fleet

➤ OCEAN VESSELS of the tanker class, to carry crude oil and petroleum products, have assumed a very important part in the merchant ship fleet recently.

America now has in its privately-owned ocean-going tanker fleet 451 vessels of nearly 6,741,000 deadweight tons. It is the world's largest tanker fleet under any one national flag.

While the bulk of the American tanker fleet operates in coast-wise and intercoastal trade, such as bringing oil from the Gulf states to eastern coastal refineries, many are in foreign trade and the number in this service has increased greatly in the past few years. These tankers are carrying petroleum products to and from the United States but they are also transporting oil from port to port in foreign countries.

America has no monopoly in tanker transportation, however. Its tanker fleet is about 24% of the world's total, according to the National Federation of American Shipping in Washington.

In a recent study made by this organization it was found that, in both imports and exports, the U. S. tanker fleet is carrying a smaller portion, contrasted with foreign ships, than in the first years immediately after World War II.

American tanker owners are today contributing the major share of U. S. shipbuilding activity, the federation states. At present, 58 tankers of 1,582,645 deadweight tons are on order or under construction in American shipyards. Of this total, 31 are for registry under the American flag and 27 for registry under foreign flags. This total may look large but throughout the world there are under order or construction tankers that total over 11,000,000 in deadweight tons.

Science News Letter, August 30, 1952

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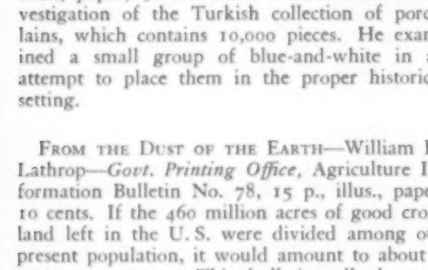

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NATURAL RESOURCES

Mineral Stockpile Needs

➤ AMERICA TODAY produces only about two-thirds of the lead it uses annually, very little of the nickel it consumes, about 40% of the antimony needed and less than 8% of the non-combustible asbestos that has many strategical applications.

These figures indicate the importance of stockpiling certain essential minerals that the United States does not mine in sufficient quantities to meet war and peacetime needs, but for which it must rely on importations from foreign countries.

The data are taken from a four-volume report of the U. S. Bureau of Mines to the National Security Resources Board, now available to the public. Each of the four volumes covers one mineral.

The reports are each entitled Materials Survey, one being Lead, and the others, Nickel, Antimony and Asbestos. They can be obtained from the Superintendent of Documents, Washington, D. C., the cost being $3.50, $2.00, $1.25, and $1.75, respectively.

The volumes are world-wide surveys of the industries, describing the minerals and ores of commercial interest, the methods of mining, smelting and refining, uses and possible substitutes. Output by each producing country is included. Of particular interest are sections dealing with the producing facilities and ore reserves of various nations.

Until 1936, lead production in the United States met the country's needs. Importations began then, but did not become of real importance until 1940. Production from American mines is not much less than in the decade preceding World War II, but consumption has greatly increased.

The storage-battery and cable-covering industries are the largest users of lead. There are, however, many other important uses, lead in tetraethyl anti-knock fluids now accounting for 10% of the annual consumption.

The United States consumes 68% of the new nickel produced each year in the world, but mines very little. Fortunately, nearby Canada is a heavy producer of nickel. It mines approximately 90% of the total production outside of the Iron Curtain. Cuba also has large nickel reserves that will become available when economical methods are developed to recover the iron and chromium by-products found in its nickel ore.

America is also the world's largest user of antimony, a metal of great importance in industry, although not as well known to the public as many of the more common metals, consuming about 34% of the production outside Iron Curtain countries.

China for years was the world's greatest producer, but this source is no longer available to the United States. Antimony has many uses, particularly in alloys. One of the most important single uses is in antimonial lead for storage batteries.

The United States has developed the greatest asbestos-products industry in the world, although it imports most of the raw materials. The products are used wherever fire resistance is essential, and there is no known substitute for asbestos used in steam packings. More important is its use in automotive brake lining and clutch facings. For these purposes no substitute is known.

Science News Letter, August 30, 1952

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MEDICINE

Pain Tests for Drugs

New drugs should be accurately and scientifically tested by the patient and their effects on him judged in the sickroom, not in the laboratory, doctor urges.

➤ THE PLACE for tests of new pain-relieving drugs is on the sickbed of the patient in pain and not in the dispassionate and unemotional atmosphere of a laboratory, Dr. Henry K. Beecher of Harvard Medical School and Massachusetts General Hospital, Boston, declared in *Science* (Aug. 15).

There is a fundamental difference, he said, in what can be learned in studying "natural" pain caused by disease or a wound and the kind of pain produced to order by pin pricks, electric shocks or heat on the forehead. An investigator familiar with the laboratory method of studying pain was unable to tell by this method the difference between the effect of 15 milligrams of morphine and a normal salt solution when he did not know which injection the subject had received.

Accurate, scientific and quantitative methods for testing new drugs for their effects on such experiences as pain, relaxation, warm glow, sensation of drunkenness, light head, heavy head, dizziness, ringing ears and nausea were urged by Dr. Beecher.

It is tedious to make such tests, he said. But it is even more time-consuming and costly to distribute the drugs to practically everybody and find out, perhaps only after centuries of use, something about what they do. After all the centuries that morphine has been used, he pointed out, "common sense" arrived at a dose of 15 milligrams which is just double the amount actually needed to give the best relief of pain.

To test the effects of a new drug, it should be first demonstrated that the drug is safe to use, not poisonous. Then it should be tried out in comparison with a standard such as morphine in standardized dosage and with a placebo. A placebo is a dummy dose containing no drug. Each of these should be sandwiched between two doses of another and given in completely random order. The observers as well as the patient should be kept ignorant of what the doses contain.

Allowance must be made, Dr. Beecher stresses, for the fact that some persons are helped by the placebo, and it is a mistake, he believes, to consider these persons either malingerers or neurotics. Placebos can cure in some cases and can block pain in normal individuals. This effect must be screened out by mathematical procedures.

The investigator or team of investigators must be kept constant during an entire series of experiments. It has been found, for example, that a sympathetic woman investigator generally obtains a higher percentage of pain relief from various medicines than does a colder, more remote, male.

Men, however, make better subjects than do women because of the unpredictable effects of the menstrual cycle.

Science News Letter, August 30, 1952

SIZE AND SURVIVAL

Which has survived most successfully, the bison or the boll weevil? You know the answer. Smallness often implies adaptability. The cells of a developing organism get smaller as growth proceeds: differentiation, specialization, adaptation.

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Questions

ASTRONOMY—What star will be the earth's pole star in 14,000 A.D.? p. 138.

• • •

BIOCHEMISTRY — What causes red-colored sweat? p. 137.

• • •

CHILD HEALTH—What pre-school preparation for youngsters before opening day? p. 134.

• • •

MEDICINE—How does bulbar polio affect the hypothalamus? p. 132.

• • •

NATURAL RESOURCES—What minerals should the U. S. be stockpiling? p. 141.

• • •

PLANT PATHOLOGY — What parts of trees have now been found to take up nourishment? p. 137.

• • •

VETERINARY MEDICINE — How can hyperkeratosis of cattle be reduced? p. 132.

• • •

Photographs: Cover and p. 135, U. S. Air Force; p. 131, Dr. E. M. Pugh; p. 133, Du Pont Company.

PUBLIC HEALTH

Protect From Poisoning

➤ AS LONG as parents are careless and children are inquisitive there will be accidental poisonings, declares Dr. J. P. Price of Florence, S. C., in a report to GP, journal of the American Academy of General Practice.

Since children learn through being inquisitive and curious, it is up to the parents to check their own carelessness if they want to prevent accidental poisoning of their children.

A few of the lessons Dr. Price says all parents should learn include:

1. Keeping all medicine in a special place out of reach of the child.
2. Discarding all bottles and cardboard boxes in which small amounts of old medicine remain.
3. Avoiding the use of soft drink bottles or small glass jars for holding solutions which are harmful if drunk.
4. Guarding against a child coming close to a can or bottle of cleaning liquid or polish which is being used.
5. Keeping the child away from any shrubs or plants which have been sprayed recently.
6. Keeping all insecticides and animal poisons in the garage or barn and never bringing them into the home.
7. Teaching the child the danger of eating the leaves or seeds of growing plants.

But should you have to make a frantic call, "Doctor, what shall I do? Little Mary just drank some floor polish," Dr. Price says the important thing is first to find out what the ingested material contained.

Putting the case in a physician's hands is imperative. While most poisonings are treated by emptying the patient's stomach, certain specific measures should be employed by the doctor to ward off unforeseen side effects. All kinds and cases of poisoning must be treated with respect.

Science News Letter, August 30, 1952

AGRICULTURE

About 600 Groups of Grasses Now Known

➤ THERE ARE about 600 groups, or genera, of grasses and about 5,870 species so far known. This was reported by Drs. Valentin Sajor and Teofilo S. Santos of the Department of Agriculture and Natural Resources, Republic of the Philippines, to the Sixth International Grassland Congress. Grasses, they said, are the most important of the plant families because of their economic uses and possibilities as sources of food, forage, medicine, raw products for household and handicraft articles, furniture and construction materials.

One recent use for a Philippine grass, they pointed out, is woven bamboo for plane construction.

Science News Letter, August 30, 1952

ASTRONOMY

No Visitors From Space

Chances that extra-terrestrial beings have anything to do with "flying saucers" are virtually zero, noted astronomer tells star-gazers' convention.

➤ WHILE IT is possible that intelligent beings do exist on earth-like planets in other solar systems, the chances that such beings would have anything to do with the "flying saucer" phenomena are virtually zero.

In fact, there is no reason to believe that "flying saucer" phenomena are extra-terrestrial. These are opinions expressed at the convention of the Western Amateur Astronomers in Berkeley, Calif., by Dr. Otto Struve, astronomer at the University of California.

The astronomer said that the "green fireball" type of objects undoubtedly are ordinary meteorites.

As for the shining objects, or lights, Dr. Struve said these must be attributed to some ordinary physical phenomena, either produced artificially by man or explicable in terms of ordinary laws of physics. One possible explanation, proposed by Prof. D. H. Menzel of Harvard is temperature inversion in the case of ordinary visible light.

Dr. Struve discounted the idea that the "flying saucers" may be directed by an intelligence that somehow surpasses the intelligence of man and, moreover, is capable of violating some of the fundamental rules of science and mechanics.

He pointed out that evidence is very strong that no planet in the solar system besides the earth is capable of supporting intelligent life. Lichens, a primitive form of life, might exist on Mars; it is improbable that higher forms exist.

If we go beyond the solar system, Dr. Struve said, we may find earth-like planets in other star systems within the galaxy. From a statistical knowledge of the universe, the scientist said that roughly 1,000 planets may exist in the depths of space which could support life. These planets would be, like the earth, satellites of stars similar to our sun.

Even so, the vast distances in the universe and the laws of science rule against any possibility that there might be communication between the earth and these hypothetical intelligent beings.

The average distance of a star, for example, is about 50,000 light years (one light year is nearly 6,000 billion miles).

"Thus," Dr. Struve said, "we receive now the light of the star, possessing one of these planets, which left its source 50,000 years ago and, conversely, any intelligent beings on such an average galactic planet would see the sun, and (if they possess adequate instruments) the earth as it was 50,000 years ago.

"We see at once how erroneous are the speculations of those who believe that the visitors from another planet might have chosen this particular time to send their flying saucers to the earth because they were aware of the sad state of affairs in the community of nations of the earth.

"If they have any knowledge of human beings, they would be aware now of the type of human beings that populated the earth at the time of the Neanderthal man. Chances are that they would be completely disinterested in what the Neanderthal man was doing or thinking.

"Thus to an astronomer, the evidence of the flying saucers appears to be completely negative. Nevertheless, as astronomers, we are not primarily concerned with the question of flying saucers, and to us it should be a source of inspiration that science now favors the belief that within our galaxy there must be thousands of planets that now support life that is not too different from the kind we observe on the earth."

Science News Letter, August 30, 1952

AERONAUTICS

Precision-Flying Jets Make First U. S. Bow

See Front Cover

➤ THE "SKYBLAZERS," in diamond formation, skim just above the ground in one of their precision-flying maneuvers, as shown on the cover of this week's SCIENCE NEWS LETTER. The jet team is scheduled to perform publicly for the first time in the United States at the International Aviation Exposition in Detroit, Aug. 30, 31 and Sept. 1. The Air Force fliers performed overseas in 11 countries.

Science News Letter, August 30, 1952

Do You Know?

Only 1.5% of the *tungsten* consumed in this country is used in lamp filaments.

Given a chance, *hogs* will eat quite a bit of coal, but apparently they do not need it for nutrition.

The careless habits and deliberate vandalism of *motorists* cost the American public $6,000,000 in 1950 alone.

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NECKTIE CASE for persons who travel frequently holds 10 ties in its plastic folds so that they are easily visible. The transparent case also protects ties from becoming wrinkled or soiled in suitcases.

Science News Letter, August 30, 1952

SLIDE PROJECTOR small enough to fit into a topcoat pocket or briefcase will enlarge 2" x 2" color transparencies up to widths of 10 feet. Weighing a little less than two pounds, the miniature projector has a multiple lens condenser system and an f.2.8 coated color-corrected anastigmat projection lens.

Science News Letter, August 30, 1952

NAIL HOLDER that clips to the head of a carpenter's hammer is especially good for persons who often mash their thumbs while starting nails. Holding nails in sizes from shingle nails to spikes, the device is useful in form work, roof framing and scaffold building, permitting the carpenter to position the work with his free hand.

Science News Letter, August 30, 1952

EYE-SHIELD MADE of lightweight plastic keeps sunlight from shining into the wearer's eyes and reduces nose sunburn. Held on by two hinged earpieces, the shield

stands straight out from the forehead as shown in the photograph, and has a non-reflecting underside that cuts down reflections from below.

Science News Letter, August 30, 1952

FLOOR WAX with an insecticide ingredient, lindane, kills roaches, ants, waterbugs and silverfish while serving as a gloss coating for wood, linoleum, asphalt, rubber tile or cement floors. Applied with a paint brush or cloth, the wax is not harmful to humans or to pets.

Science News Letter, August 30, 1952

POST-HOLE DIGGER powered by an electric drill that will handle ½-inch bits or larger takes some of the tiresome work out of digging fence post holes. Made of case-hardened heat-treated steel, the device works in either hard or soft ground.

Science News Letter, August 30, 1952

EXPANSION ANCHORS made of plastic are driven into ¼-inch drilled holes. Molded gripper fins prevent the anchors from turning inside the hole as screws are tightened into place. If necessary, the screws can be withdrawn from the anchors and put back as firmly as before.

Science News Letter, August 30, 1952

AUTOMOBILE LIGHT, handy for use while changing tires at night, also blinks a red warning at oncoming traffic. Small enough to be carried in the glove compartment, the light plugs into the cigar lighter socket and has 17 feet of cord in its base.

Science News Letter, August 30, 1952

Nature Ramblings

CROP PLANTS native to this hemisphere form an old and familiar catalog: corn, potatoes, tobacco, beans, pumpkins, squashes and all the rest. However, all these came from the south, from the tropics and subtropics.

Even the ones that the Indians of the East and Midwest were cultivating when the first white settlers came had been brought to them by nameless prehistoric forerunners of today's agricultural extension workers.

But a whole array of highly appreciated fruits and nuts occur naturally in the more heavily populated parts of the United States. Indians used them, though they did not cultivate them, finding enough for their needs in the wild state. European settlers, finding them to their taste, brought them into orchards and gardens, some in Colonial times, some more recently.

Among the earliest, and certainly among the most successful, were our native grapes. Old-world grapes did not take very kindly to our eastern conditions, though they do very well in California. But three species native to the East were made into good

Success Stories

table and juice grapes by selection and hybridization, and became the foundations of such types as Concord, Catawba and Scuppernong.

Cranberries and blueberries were long gathered for the white man's market just as the Indians gathered them, direct from the wild. In recent times, however, great areas of eastern bog and acid-soil uplands have been devoted to the cultivation of improved varieties of these native berries.

Native species of strawberry, raspberry, gooseberry, currant and plum have been used in producing successful hybrids with European, Asiatic and South American fruits. Our American wild crabapples, however, have not been used in breeding new apple varieties, probably because they are too sour and too puckery with tannin.

Three native fruits that are still largely neglected are paw-paws, persimmons and red haws.

The roster of native nuts that have made good in cultivation is shorter, but contains some notable items. Outstanding is the pecan, native to our South. More recent, but highly promising, has been the cultivation of two of its relatives, black walnut and shellbark hickory.

Best-flavored of all chestnuts was our native species, now virtually extinct from the deadly attack of the blight fungus. Sole chance of survival of the American chestnut flavor lies in the use of stray flowers, still found, as source of pollen for producing hybrids with the better kinds of Asiatic chestnuts.

Science News Letter, August 30, 1952